WHAT IS CLAIMED IS:

1. A synthetic nucleic acid molecule comprising a sequence of nucleotides that encodes a rhesus monkey carcinoembryonic antigen (CEA) protein, the synthetic nucleic acid molecule being codon-optimized for high level expression in a human cell.

2. The synthetic nucleic acid molecule of claim 1, wherein the nucleic acid molecule encodes a rhesus monkey CEA protein as set forth in SEQ ID NO:2 or SEQ ID NO:3.

3. The synthetic nucleic acid molecule of claim 2 wherein the nucleic acid is DNA.

4. The synthetic nucleic acid molecule of claim 2 wherein the nucleic acid is mRNA.

5. The synthetic nucleic acid molecule of claim 2 wherein the nucleic acid is cDNA.

6. The synthetic nucleic acid molecule of claim 2 wherein the sequence of nucleotides comprises the sequence of nucleotides set forth in SEQ ID NO:1.

7. A vector comprising the nucleic acid molecule of claim 1.

8. A host cell comprising the vector of claim 7.

9. A process for expressing a rhesus monkey carcinoembryonic antigen (CEA) protein in a recombinant host cell, comprising:

(a) introducing a vector comprising the nucleic acid of claim 1 into a suitable host cell; and,

(b) culturing the host cell under conditions which allow expression of said rhesus monkey CEA protein.

10. A method of preventing or treating cancer comprising administering to a mammal a vaccine vector comprising a synthetic codon-optimized nucleic acid molecule, the nucleic acid molecule comprising a sequence of nucleotides that encodes a rhesus monkey carcinoembryonic antigen (rhCEA) protein as set forth in SEQ ID NO:2 or SEQ ID NO:3.

11. A method according to claim 10 wherein the mammal is human.

12. A method according to claim 10 wherein the vector is an adenovirus vector or a plasmid vector.

13. A method according to claim 10 wherein the vector is an adenoviral vector comprising an adenoviral genome with a deletion in the adenovirus E1 region, and an insert in the adenovirus E1 region, wherein the insert comprises an expression cassette comprising:

(a) a codon-optimized polynucleotide encoding a rhesus monkey CEA protein; and

(b) a promoter operably linked to the polynucleotide.

14. A method according to claim 10 wherein the vector is a plasmid vaccine vector, which comprises a plasmid portion and an expressible cassette comprising

(a) a codon-optimized polynucleotide encoding a rhesus monkey CEA protein; and

(b) a promoter operably linked to the polynucleotide.

15. An adenovirus vaccine vector comprising an adenoviral genome with a deletion in the E1 region, and an insert in the E1 region, wherein the insert comprises an expression cassette comprising:

(a) a codon-optimized polynucleotide encoding a rhesus monkey CEA protein; and

(b) a promoter operably linked to the polynucleotide.

16. An adenovirus vector according to claim 15 which is an Ad 5 vector.

17. An adenovirus vector according to claim 15 which is an Ad 6 vector.

18. An adenovirus vector according to claim 15 which is an Ad 24 vector.

19. A vaccine plasmid comprising a plasmid portion and an expression cassette portion, the expression cassette portion comprising:

(a) a codon-optimized polynucleotide encoding a rhesus monkey CEA protein; and

(b) a promoter operably linked to the polynucleotide.

20. A method of protecting a mammal from cancer comprising:

(a) introducing into the mammal a first vector comprising:

(i) a codon-optimized polynucleotide encoding a rhesus monkey carcinoembryonic antigen (CEA) protein; and

(ii) a promoter operably linked to the polynucleotide;

(b) allowing a predetermined amount of time to pass; and

(c) introducing into the mammal a second vector comprising:

(i) a codon-optimized polynucleotide encoding a rhesus monkey CEA protein; and

(ii) a promoter operably linked to the polynucleotide.

21. A method according to claim 20 wherein the first vector is a plasmid and the second vector is an adenovirus vector.

22. A method according to claim 20 wherein the first vector is an adenovirus vector and the second vector is a plasmid.

23. A method according to claim 20 wherein the first and second vectors are adenovirus vectors.

24. A method according to claim 20 wherein the second vector is an Ad5 vector.

25. A method according to claim 20 wherein the second vector is an Ad24 vector.

26. A method of treating a mammal suffering from a colorectal carcinoma comprising:

(a) introducing into the mammal a first vector comprising:

(i) a codon-optimized polynucleotide encoding a rhesus monkey CEA protein; and

(ii) a promoter operably linked to the polynucleotide;

(b) allowing a predetermined amount of time to pass; and

(c) introducing into the mammal a second vector comprising:

(i) a codon-optimized polynucleotide encoding a rhesus monkey CEA protein; and

(ii) a promoter operably linked to the polynucleotide.

27. A method according to claim 26 wherein the first vector is a plasmid and the second vector is an adenovirus vector.

28. A method according to claim 26 wherein the first vector is an adenovirus vector and the second vector is a plasmid.

29. A method according to claim 26 wherein the first and second vectors are adenovirus vectors.